Category

Metal-Mediated Synthesis

Key words

zinc chloride catalysis

intramolecular cyclization

substituted furans

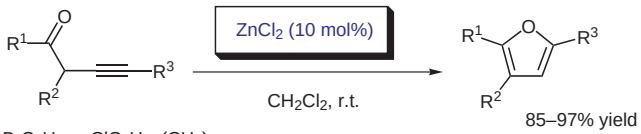
alk-3-ynones

A. SNIADY, A. DURHAM, M. S. MORREALE, K. A. WHEELER, R. DEMBINSKI* (OAKLAND UNIVERSITY, ROCHESTER AND EASTERN ILLINOIS UNIVERSITY, CHARLESTON, USA)

Room Temperature Zinc Chloride-Catalyzed Cycloisomerization of Alk-3-yn-1-ones: Synthesis of Substituted Furans

Org. Lett. **2007**, *9*, 1175-1178.

Practical and Economic Zinc Chloride-Catalyzed Synthesis of Substituted Furans

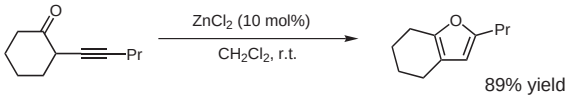


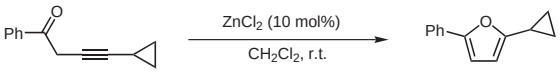
R^1 = Ph, *p*-BrC_6H_4, *p*-ClC_6H_4, $(CH_2)_4$

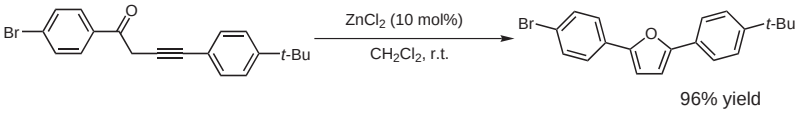
R^2 = H, $(CH_2)_4$

R^3 = *p*-MeC_6H_4, *c*-C_3H_5, *p*-*t*-BuC_6H_4, $MeOCH_2$, $Me(CH_2)_2$

Selected Examples:







Significance: The $ZnCl_2$-catalyzed cycloisomerization of alk-3-ynones offers a simple and direct access to highly substituted furans. It is a practical and economic alternative towards cycloisomerization protocols that involve expensive gold catalysts. The reaction proceeds at ambient temperature and tolerates functional groups such as a propargyl ester functionality. The respective products could be isolated in high yields after relatively short reaction times and an easy-to-handle work-up.

Comment: Substituted furans represent an important substance class as constituents in many natural products, pharmaceuticals and flavoring essences. The $ZnCl_2$-catalyzed cycloisomerization is an economic route that manages without the use of cytotoxic and/or expensive transition metals. The authors plan to extend this method towards the preparation of potent antiviral furopyrimidine nucleosides from 5-alkynyl-2′-deoxyuridines.

SYNFACTS Contributors: Paul Knochel, Tobias Thaler
Synfacts 2007, 6, 0638-0638 Published online: 22.05.2007
DOI: 10.1055/s-2007-968546; **Reg-No.:** P05607SF